In the claims:

1. (Currently Amended) An inerting system comprising:

an air source supplying pressurized air;

at least one fuel tank circuit associated with at least one fuel tank;

a heat exchanger cooling said pressurized air;

at least one air separation module in communication with said heat exchanger and separating inerting gas from said pressurized air;

a controller controlling flow rate of said inerting gas; [[and]]

an ozone converter converting ozone contained within said pressurized air to oxygen; and

a temperature sensor coupled to an air flow line and generating a temperature signal, said controller adjusting ram air flow through said heat exchanger in response to said temperature signal.

2. (Currently Amended) A system as in claim 1 further comprising~~:~~

~~a heat exchanger cooling said pressurized air; and~~

a bleed air outlet in fluid communication with said heat exchanger, wherein said heat exchanger receives said pressurized air from said bleed air outlet.

3. (Canceled)

4. (Original) A system as in claim 1 further comprising a ram air inlet supplying cool air to said heat exchanger.

5. (Original) A system as in claim 4 wherein said ram air inlet receives ram air from a ram air system.

6. (Canceled)

7. (Currently Amended) A system as in claim 1 further comprising~~:~~

~~a heat exchanger cooling said pressurized air; and~~

a filter in fluid communication with said heat exchanger and filtering at least a portion of said pressurized air.

8. (Original) A system as in claim 1 further comprising a main check valve fluidically coupled between said at least one air separation module and said at least one fuel tank and preventing reverse flow of said inerting gas or fuel.

9. (Original) A system as in claim 1 wherein said at least one fuel tank circuit comprises at least one flow rate control valve and orifice, said controller coupled to said at least one control valve and altering flow of said inerting gas to said fuel tanks.

10. (Original) A system as in claim 1 wherein said at least one fuel tank circuit comprises at least one check valve for preventing reverse flow of fuel.

11. (Original) A system as in claim 1 wherein said at least one fuel tank circuit comprises at least one float valve for preventing reverse flow of said inerting gas.

12. (Original) A system as in claim 1 wherein said at least one fuel tank has a common air vent.

13. (Original) A system as in claim 1 wherein said at least one fuel tank is dual-vented.

14. (Original) A system as in claim 1 wherein said at least one fuel tank has at least one associated vent check valve, said at least one associated vent check valve controlling airflow through said at least one associated vent.

15. (Original) A system as in claim 1 wherein the inerting system maintains oxygen content level within said at least one fuel tank to be approximately 12% or less.

16. (Original) A system as in claim 1 wherein said controller utilizes low-flow bleed air during at least one of mode selected from a climb mode and a cruise mode of an aircraft.

17. (Original) A system as in claim 1 wherein said controller modulates ram airflow to maintain inlet temperature of said at least one air separation module.

18. (Original) A system as in claim 1 wherein said at least one air separation module in separating inerting gas from said pressurized air separates nitrogen-enriched air from said pressurized air.

19. (Original) A system as in claim 1 wherein said controller operates in at least one inerting system mode.

20. (Previously Presented) A system as in claim 1 further comprising an ejector within at least a portion of and mixing said inerting gas with other gases in said at least one fuel tank, the ejector using motive flow of said inerting gas to cause said mixing.

21. (Original) A system as in claim 20 wherein said ejector circulates gases in said at least one fuel tank.

22. (Original) A system as in claim 1 wherein said at least one fuel tank is a center tank.

23. (Currently Amended) An inerting system comprising:

an air source supplying pressurized air;

at least one fuel tank circuit associated with at least one fuel tank;

a heat exchanger cooling said pressurized air;

at least one air separation module in communication with said heat exchanger and separating inerting gas from said pressurized air, said at least one air separation module <u>at least partially enclosed by</u>~~having~~ at least one shroud <u>that is</u> receiving exhaust air; and

a controller controlling flow rate of said inerting gas.

24. (Previously Presented) A method of designing an aircraft inerting system that supplies inerting gas to at least one fuel tank of an aircraft comprising:

receiving pressurized air;

cooling said pressurized air;

separating inerting gas from said pressurized air; and

controlling flow of said inerting gas from at least one air separation module to the at least one fuel tank to maintain oxygen content level in the at least one fuel tank at or below approximately 12% for a majority of flight

conditions and to allow said oxygen content level to exceed approximately 12% for a minority of said flight conditions.

25. (Original) A method as in claim 24 further comprising utilizing low-flow bleed air during at least one of mode selected from a climb mode and a cruise mode of the aircraft.

26. (Canceled)

27. (Original) A method as in claim 24 further comprising modulating ram airflow to maintain inlet temperature of at least one air separation module.

28. (Original) A method as in claim 24 wherein said inerting gas is supplied to the at least one fuel tank when the aircraft is on the ground.

29. (Original) A method as in claim 24 wherein said inerting gas is supplied to the at least one fuel tank when the aircraft is in flight.

30. (Original) A method as in claim 24 further comprising operating in multiple inerting system modes.

31. (Original) A method as in claim 24 further comprising circulating gases in said at least one fuel tank.

32. (Previously Presented) An inerting system for an aircraft comprising:

at least one fuel tank circuit having at least one fuel tank;

a bleed air source;

a heat exchanger in fluid communication with and receiving pressurized air from source, said heat exchanger cooling said pressurized air;

at least one air separation module in fluid communication with said heat exchanger and separating inerting gas from said pressurized air;

a main check valve fluidically coupled between said at least one air separation module and said at least one fuel tank and preventing reverse flow of said inerting gas;

an ejector within at least a portion of and using inerting gas flow to significantly mix said inerting gas with other gases in and throughout said at least one fuel tank; and

a controller controlling flow of said inerting gas from said at least one air separation module to said at least one fuel tank to minimize exposure to oxygen content levels greater than approximately 12%.

33. (Canceled)

34. (Previously Presented) An aircraft inerting system for an aircraft comprising:

an air source supplying pressurized air;

at least one fuel tank;

an air manipulation and separation circuit having at least one air separation module and separating inerting gas from said pressurized air;

an ejector within at least a portion of and using motive flow of said inerting gas to mix said inerting gas with other gases in said at least one fuel tank; and

a controller controlling oxygen content level within said at least one fuel tank.

35. (Original) A system as in claim 34 further comprising a heat exchanger cooling said pressurized air.

36. (Currently Amended) A system as in claim 34 ~~further comprising an~~wherein said ejector is within at least a portion of and ~~circulating~~circulates fluid flow in at least one center fuel tank.

37. (Original) A system as in claim 36 further comprising a bleed air outlet in fluid communication with said heat exchanger, wherein said heat exchanger receives said pressurized air from said bleed air outlet.

38. (Original) A system as in claim 36 further comprising a ram air inlet supplying cool air to said heat exchanger.

39. (Previously Presented) A system as in claim 34 further comprising an ozone converter converting ozone contained within said pressurized air to oxygen.

40. (Original) A system as in claim 34 wherein said at least one fuel tank circuit comprises at least one float valve for preventing reverse flow of said inerting gas.

41. (Previously Presented) A system as in claim 1 wherein said controller controls said flow rate in response to a plurality of inputs including phase of aircraft flight and an inerting system temperature.

42. (Previously Presented) A method as in claim 24 further comprising:

minimizing exposure to oxygen content levels greater than approximately 12% within said at least one fuel tank; and

minimizing at least one of size of system components, weight of system components, and system complexity while maintaining said exposure.

43. (Previously Presented) A method as in claim 24 wherein controlling said flow comprises adjusting said flow in response to a plurality of inputs including phase of aircraft flight and an inerting system temperature.